

**IN THE CLAIMS:**

This listing of claims will replace all prior versions of claims in the application.

1. (Currently amended) A method for evaluating myocardial tissue using  $^{23}\text{Na}$  or  $^{39}\text{K}$  magnetic resonance imaging (MRI), comprising:
  - a) treating the myocardial tissue with an iron oxide contrast agent so as to attenuate the  $^{23}\text{Na}$  or  $^{39}\text{K}$  MRI signal for ventricular cavity blood and viable well-perfused tissue;
  - b) after treating the myocardial tissue with the iron oxide contrast agent, manipulating echo time (TE) so as to assist in identifying infarcted myocardial tissue; and
  - b) imaging the tissue with  $^{23}\text{Na}$  or  $^{39}\text{K}$  magnetic resonance to detect infarcted myocardial tissue and provide contrast between the ventricular cavity and infarcted myocardial tissue; thereby evaluating myocardial tissue.
2. (Original) The method of claim 1 wherein the tissue is imaged with  $^{23}\text{Na}$  MRI.
3. (Original) The method of claim 1 wherein the tissue is imaged with  $^{39}\text{K}$  MRI
4. (Cancelled)
5. (Cancelled)
6. (Previously presented) The method of claim 1 further comprising assessing the MRI image to detect infarcted tissue.
7. (Previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer.

8. (Previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer having oxygen substitution.

9. (Previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a polysaccharide.

10. (Previously presented) The method of claim 1 wherein the contrast agent comprises one or more iron atoms coordinated with a dextran.

11. (Previously presented) The method of claim 1 wherein the contrast agent is MION-46.

12. (Previously presented) The method of claim 1 wherein the contrast agent is administered to a subject suffering from or susceptible to myocardial infarction.

13. (Original) The method of claim 12 further comprising selecting a subject suffering or susceptible to myocardial infarction and then administering the contrast agent to the selected subject.

14. (Previously presented) The method of claim 1 wherein the contrast agent is administered to a subject and a magnetic resonance study is made of the subject's heart.

15. (Original) The method of claim 14 wherein the magnetic resonance study differentiates between normal myocardial tissue, injured myocardial tissue and infarcted myocardial tissue.

16. (Currently amended) A method for identifying infarcted myocardial tissue of a subject using  $^{23}\text{Na}$  or  $^{39}\text{K}$  MRI comprising:

- a) administering to the subject an imaging-effective amount of an iron oxide contrast agent so as to minimize signal intensity differences between ventricular cavity blood and well-perfused viable myocardium, maximize signal intensity differences between non-viable myocardium and ventricular cavity blood in myocardial infarction, and maximize signal intensity differences between non-viable myocardium and well-perfused viable myocardium in myocardial infarction, wherein the amount of contrast agent administered is manipulated so as to reduce  $T_{2s}$  and/or  $T_{2f}$  values of ventricular cavity blood and viable well-perfused tissue, whereby the  $^{23}\text{Na}$  or  $^{39}\text{K}$  MRI signal from ventricular cavity blood and viable well-perfused tissue is reduced; and
- b) imaging the subject's heart with  $^{23}\text{Na}$  or  $^{39}\text{K}$  magnetic resonance to provide maximal contrast between the ventricular cavity and infarcted myocardial tissue and identify infarcted myocardial tissue; thereby identifying infarcted myocardial tissue.

17. (Original) The method of claim 16 wherein the subject is suffering from or has suffered cardiac disorder.

18. (Original) The method of claim 16 or 17 wherein the subject is suffering from or has suffered heart failure or cardiogenic shock.

19. (Original) The method of claim 16 or 17 wherein the subject is suffering from or has suffered a cardiovascular disorder.

20. (Previously presented) The method of claim 16 wherein the tissue is imaged with  $^{23}\text{Na}$  MRI.

C. Constantinides  
U.S.S.N. 10/044,296  
Page 5 of 11

21. (Previously presented) The method of claim 16 wherein the tissue is imaged with <sup>39</sup>K MRI.

22. (Previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer.

23. (Previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a polymer having oxygen substitution.

24. (Previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a polysaccharide.

25. (Previously presented) The method of claim 16 wherein the contrast agent comprises one or more iron atoms coordinated with a dextran.

26. (Canceled)

27. (Previously presented) The method of claim 16 wherein the contrast agent is MION-46.

28-36. (Canceled)

37. (Canceled)

38. (Currently amended) The method of claim 1-37, further comprising selecting the quantity of contrast agent and echo time so as to minimize signal intensity between ventricular cavity blood and well-perfused viable myocardium, maximize signal intensity differences between non-viable myocardium and ventricular cavity blood in myocardial infarction, and

maximize signal intensity differences between non-viable myocardium and well-perfused viable myocardium in myocardial infarction.

39. (Previously presented) The method of claim 16, further comprising, after administering to the subject an imaging-effective amount of an iron oxide contrast agent, manipulating echo time (TE) so as to assist in identifying infarcted myocardial tissue.

40. (New) The method of claim 37, wherein the amount of contrast agent administered is manipulated so as to reduce  $T_{2s}$  and/or  $T_{2f}$  values of ventricular cavity blood and viable well-perfused tissue, whereby the  $^{23}\text{Na}$  or  $^{39}\text{K}$  MRI signal from ventricular cavity blood and viable well-perfused tissue is reduced.

41. (Currently amended) The method of claim 40 or 16 wherein the echo time (TE) is further manipulated so as to reduce the  $^{23}\text{Na}$  or  $^{39}\text{K}$  MRI signal in ventricular cavity blood and viable well-perfused tissue as a result of the altered  $T_{2s}$  and/or  $T_{2f}$  values of ventricular cavity blood and viable well-perfused tissue.

42. (Previously presented) The method of claim 41, wherein the echo time (TE) is manipulated so as to eliminate the  $^{23}\text{Na}$  or  $^{39}\text{K}$  MRI signal as a result of the slow transverse relaxation  $T_{2s}$  of blood.